Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1-22. (Cancel)

23. (New) A method for controlling a drive motor that is coupled to a movable member that has a range of motion including a first position and a second position, wherein the movable member has a biasing force applied toward the first position, the method comprising the steps of:

providing power to the drive motor to move the movable member against the biasing force along the range of motion from the first position toward the second position;

determining when the drive motor stalls along the range of motion at a stalled position by monitoring one or more electrical characteristic of the drive motor; and

reducing the power supplied to the drive motor to a level that is adapted to maintain the movable member at or substantially at the stalled position against the bias force if the determining step determines that the drive motor has stalled.

24. (New) The method of claim 23 wherein the determining step determines when the drive motor stalls along the range of motion at a stalled position by at least intermittently monitoring one or more electrical characteristic of the drive motor over a period of time.

25. (New) The method of claim 23 wherein the determining step determines when the drive motor stalls along the range of motion at a stalled position by determining that the one or more electrical characteristic has exceeded a threshold value for a period of time.

26. (New) The method of claim 23 wherein the electrical characteristic includes current draw.

27. (New) The method of claim 23 wherein the electrical characteristic includes power draw.

28. (New) The method of claim 23 further comprises the step of repeating the providing and determining steps one or more times if the determining step determines that the drive motor has stalled, before performing the reducing step.

29. (New) A method for controlling a drive motor that is coupled to a movable member that has a range of motion including a rest position and an non-rest position, wherein the movable member has a biasing force applied toward the rest position, the method comprising the steps of:

providing power to the drive motor to move the movable member against the biasing force along the range of motion from the rest position toward the non-rest position;

determining if the drive motor stalls along the range of motion at a stalled position;

if the determining step determines that the drive motor has stalled, repeating the providing and determining steps one or more times to determine if the motor is still stalled;

if the drive motor is not still stalled, repeating the providing, determining and repeating steps until the drive motor is still stalled; and

if either of the repeating steps determines that the drive motor is still stalled, reducing the power supplied to the drive motor to a level that is adapted to maintain the movable member at or substantially at the stalled position against the bias force.

30. (New) The method of claim 29 wherein the determining step determines if the drive motor stalls along the range of motion at a stalled position by monitoring one or more electrical characteristic of the drive motor.

31. (New) The method of claim 30 wherein the electrical characteristic includes current draw.

32. (New) The method of claim 30 wherein the electrical characteristic includes power draw.

33. (New) The method of claim 29 wherein the determining step determines when the drive motor stalls along the range of motion at a stalled position by at least intermittently monitoring one or more electrical characteristic of the drive motor over a period of time.

34. (New) The method of claim 33 wherein the determining step determines when the drive motor stalls along the range of motion at a stalled position by determining that the one or more electrical characteristic has exceeded a threshold value for a period of time.

35. (New) A method for controlling a drive motor that is coupled to a movable member that has a range of motion including a first position and a second position, the method comprising the steps of:

providing power to the drive motor in an attempt to move the movable member along at least part of the range of motion of the movable member toward the second position;

determining if the motor stalls at a stalled position;

repeating the driving and determining steps one or more times in an attempt to move the movable member past the stalled position if the determining step determines that the motor has stalled; and

reducing the power supplied to the drive motor to a power level that is not sufficient to move the movable member past the stalled position but above zero, if the last performed determining step determines that the drive motor is still stalled.

36. (New) The method of claim 35 wherein the movable member has a biasing force applied toward the first position, and wherein the reducing step reduces the power supplied to the

drive motor to a level that is adapted to maintain the movable member at or substantially at the stalled position against the bias force.

37. (New) The method of claim 35 wherein the determining step determines if the drive motor stalls along the range of motion at a stalled position by monitoring one or more electrical characteristic of the drive motor.

38. (New) The method of claim 37 wherein the electrical characteristic includes current draw.

39. (New) The method of claim 37 wherein the electrical characteristic includes power draw.

40. (New) The method of claim 35 wherein the determining step determines when the drive motor stalls along the range of motion at a stalled position by at least intermittently monitoring one or more electrical characteristic of the drive motor over a period of time.

41. (New) The method of claim 35 wherein the determining step determines when the drive motor stalls along the range of motion at a stalled position by determining that the one or more electrical characteristic has exceeded a threshold value for a period of time.

42. (New) A method for controlling a drive motor that is coupled to a damper through a gear assembly, the damper having a closed position and an open position, where during normal operation, the drive motor is activated to move the damper from the closed position to the open position, and the motor stalls at the open position, the method comprising the steps of:

providing power to the drive motor to move the damper to the open position via the gear assembly, wherein the power provided to the drive motor is below a level where the drive motor would produce a torque that causes damage to the drive motor, the gear assembly and the damper when the motor normally stalls at the open position; and

determining when the drive motor stalls by monitoring the power consumed by the drive motor.

43. (New) The method of claim 42 further comprising the step of reducing the power provided to drive motor if the determining step determines that the motor has stalled.

44. (New) The method of claim 42 further comprising the step of repeating the providing and determining steps one or more times if the determining step determines that the drive motor has stalled.

45. (New) The method of claim 44 further comprising the step of reducing the power provided to the drive motor if the last performed determining step determines that the drive motor is still stalled.

46. (New) The method of claim 45 wherein the damper is biased toward the closed position with a bias force, and the drive motor drives the damper away from the closed position, the reducing step reduces the power supplied to the drive motor to a level that is adapted to maintain the damper at or substantially at the stalled position against the bias force.

47. (New) The method of claim 42 wherein the determining step at least intermittently monitors the power consumed by the drive motor for a period of time.

48. (New) The method of claim 42 wherein the determining step determines that the drive motor has stalled if the power consumed by the drive motor exceeds a threshold value for a period of time.

49. (New) The method of claim 48 further comprising the step of repeating the providing and determining steps one or more times if the determining step determines that the drive motor has stalled.

50. (New) The method of claim 49 further comprising the step of reducing the power provided to the drive motor if the last performed determining step determines that the drive motor is still stalled.

51. (New) A method for controlling a drive motor having a rotating motor shaft, wherein the rotating motor shaft causes either directly or indirectly movement of a movable member, the method comprising the steps of:

providing power to the drive motor to rotate the motor shaft and to move the movable member;

determining if the drive motor stalls at a stall position without having to sense the physical rotation of the motor shaft; and

reducing the power supplied to the drive motor to a power level that is not sufficient to move the movable member past the stalled position but above zero, if the determining step determines that the drive motor is stalled.

52. (New) The method of claim 51 wherein the movable member is biased toward a first position with a bias force, and the drive motor drives the movable member away from the first position, the reducing step reduces the power supplied to the drive motor to a level that is adapted to maintain the movable member at or substantially at the stalled position against the bias force.

53. (New) The method of claim 51 wherein the determining step determines if the drive motor has stalled at a stall position by monitoring one or more electrical characteristic of the drive motor.

54. (New) The method of claim 53 wherein the electrical characteristic includes current draw.

55. (New) The method of claim 53 wherein the electrical characteristic includes power draw.

56. (New) The method of claim 51 wherein the determining step determines when the drive motor has stalled at a stall position by at least intermittently monitoring one or more electrical characteristic of the drive motor over a period of time.

57. (New) The method of claim 56 wherein the determining step determines when the drive motor has stalled at a stall position by determining that the one or more electrical characteristic has exceeded a threshold value for a period of time.

58. (New) A method for controlling a drive motor that is coupled to a damper that has a closed position and an open position, wherein the damper is biased toward the closed

position with a bias force, and the drive motor drives the damper toward the open position against the bias force, the method comprising:

providing drive power to the drive motor in an attempt to move the damper toward the open position; and

determining when the drive motor stalls by determining when the drive power that is provided to the drive motor exceeds a threshold value at least one time.

59. (New) The method of claim 58 wherein the determining step determines when the drive motor stalls by determining when the drive power that is provided to the drive motor exceeds a threshold value two or more times.

60. (New) The method of claim 58 further comprising the step of reducing the drive power to the drive motor after the determining step determines that the drive motor has stalled.

61. (New) A method for controlling a drive motor that is coupled to a damper that has a closed position and an open position, wherein the damper is biased toward the closed position with a bias force, and the drive motor drives the damper toward the open position against the bias force, the method comprising:

providing drive power to the drive motor in an attempt to move the damper toward the open position; and

determining if the drive motor has stalled by determining that the drive power that is provided to the drive motor exceeds a threshold value, cutting the drive power to the drive motor, providing drive power to the drive motor, and again determining that the drive power exceeds a threshold value at least one time.

62. (New) A method according to claim 61 wherein the determining step repeats the cutting and again determining steps one or more times.

63. (New) The method of claim 61 further comprising the step of reducing the drive power to the drive motor after the determining step determines that the drive motor has stalled.

64. (New) A method for controlling a drive motor that is coupled to a damper that has a closed position and an open position, wherein the damper is biased toward the closed position with one or more springs that produce a relatively linearly increasing bias force as the damper moves toward the open position, the drive motor driving the damper toward the open position against the bias force, the method comprising:

providing drive power to the drive motor to move the damper toward the open position against the relatively linearly increasing bias force, the drive power increasing relatively linearly with a slope as the damper is moved toward the open position to overcome the relatively linearly increasing bias force of the one or more springs;

determining when the drive motor stalls at a stalled position by detecting an increase in drive power that is not consistent with the slope of the drive power; and

when the determining step determines that the drive motor has stalled, reducing the power provided to the drive motor.

65. (New) The method of claim 64 wherein the determining step determines that the drive motor has stalled at the stalled position when the increase in drive power that is not consistent with the slope of the drive power continues for a period of time.

66. (New) The method of claim 64 further comprising the step of repeating the providing and determining steps one or more times before reducing the power provided to the drive motor.

67. (New) The method of claim 64 wherein the reducing step reduces the power supplied to the drive motor to a level that is adapted to maintain the damper at or substantially at the stalled position against the bias force of the one or more springs.

68. (New) A method for controlling a drive motor that is coupled to a movable member that has a range of motion including a rest position and an non-rest position, wherein the movable member has a biasing force applied toward the rest position, the method comprising the steps of:

providing power to the drive motor to move the movable member against the biasing force along the range of motion from the rest position toward the non-rest position;

determining if the drive motor stalls along the range of motion at a stalled position;

if the determining step determines that the drive motor has stalled, cutting the power provided to the drive motor, and repeating the providing and determining steps one or more times to determine if the drive motor is still stalled;

if the drive motor is still stalled, reducing the power supplied to the drive motor to a level that is adapted to maintain the movable member at or substantially at the stalled position against the bias force.

69. (New) The method of claim 68 wherein the motor is a DC motor.

70. (New) A method for controlling a drive motor that is coupled to a damper that has a closed position and an open position, wherein the damper is biased toward the closed position with a bias force, and the drive motor drives the damper toward the open position against the bias force, the method comprising:

providing an open damper command signal to initiate moving the damper to the open position;

providing drive power to the drive motor to move the damper toward the open position;

determining if the drive motor has stalled at a stalled position by determining that the drive power that is provided to the drive motor exceeded a threshold value one or more times;

reducing the drive power supplied to the drive motor to a level that is adapted to maintain the movable member at or substantially at the stalled position against the bias force if the determining step determines that the drive motor has stalled;

providing a close damper command signal to initiate moving the damper to the closed position; and

removing the power to the drive motor.

71. (New) The method of claim 70 wherein the motor is a DC motor.

72. (New) A method for controlling a drive motor that is coupled to a damper through a gear assembly, the damper having a closed position and an open position, where during normal operation, the drive motor is activated to move the damper from the closed position to the open position, and the motor stalls at the open position, the method comprising the steps of:

providing power to the drive motor to move the damper to the open position via the gear assembly, wherein the power provided to the drive motor is below a level where the drive motor would produce a torque that causes damage to the drive motor, the gear assembly and the damper even when the motor normally stalls at the open position; and

detecting when the power consumed by the drive motor exceeds a threshold value one or more time.

73. (New) The method of claim 72 further comprising the step of reducing the drive power after the detecting step detects when the drive power consumed by the drive motor exceeds the threshold value the at least one time.

74. (New) A method for controlling a drive motor that is coupled to a damper that has a closed position and an open position, wherein the damper is biased toward the closed position with a bias force, and the drive motor drives the damper toward the open position against the bias force and stalls at the open position causing the drive power to exceed a threshold value, the method comprising:

providing drive power to the drive motor in an attempt to move the damper toward the open position;

detecting when the drive power that is provided to the drive motor exceeds the threshold value at least one time.

75. (New) The method of claim 74 further comprising the step of reducing the drive power after the detecting step detects when the drive power provided to the drive motor exceeds the threshold value the at least one time.